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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/683,750	10/10/2003	Weitao Jia	JEN-0052-D	2817

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EXAMINER	
WARTALOWICZ, PAUL A	

ART UNIT	PAPER NUMBER
1754	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	**Application No.** 10/683,750	**Applicant(s)** JIA ET AL.	
	Examiner Paul A. Wartalowicz	**Art Unit** 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *37-46* is/are pending in the application.

4a) Of the above claim(s) *1-36* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *37-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Withdrawn Rejections

The objections and 35 USC 112 objections have been withdrawn.

Response to Arguments

Applicant's arguments filed 12/21/06 have been fully considered but they are not persuasive.

Applicant argues that that the average diameter of the particles represented by Figure 2 appears to be about 200 nm and that the agglomerates are much longer than the presently claimed silica chains of about 5 to about 400 nanometers.

However, the arguments mention nothing about the embodiment encompassed by figure 1 which appears to meet the claim limitations. Additionally, because a few of the chains may be longer than the claimed range does not indicate that Yuasa fails to teach the claimed limitations. The language of the claim is open-type comprising language and is open to comprising chains longer than the claimed range.

Applicant argues that Waknine fails to disclose silica particles in the form of chains having lengths of about 5 to about 400 nanometers.

However, Waknine teaches the silica particles are colloidal and thus would inherently form chains. Due to the particle size of the silica, the chains would inherently exhibit the claimed length.

Applicant argues that Zhang discloses that "a filler comprising a substantially amorphous cluster of non-heavy metal oxide and heavy metal oxide" can also be used.

However, Zhang is not limited to this embodiment of substantially amorphous cluster of non-heavy metal oxide and a heavy metal oxide". Additionally, essentially free of crystalline structure does not necessitate completely free of crystalline structure. This is especially relevant in light of the fact that the claim language only requires one crystalline phase.

The claims do not necessitate that the silica have at least one crystalline phase, only that the filler has at least one crystalline phase, therefore, even the embodiment that discloses the silica agglomerates with the crystalline zirconia particles meet the claim limitations.

Applicant argues that Bullock discloses various silanes, not silica particles.

However, Bullock is not relied upon to teach silica particles. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Bullock is relied upon to show that the teachings in each reference would lead one of ordinary skill in the art to believe that they are roughly equivalents, used on similar materials for similar effect on products having a similar end use; the silanes of Bullock achieve the purpose of the silanes of Bowen.

Applicant argues that the results disclosed in the specification are "unexpected" when compared to commercially available fillers.

However, this is not persuasive for at least two reasons. First, it is unclear why or how these results are "unexpected. Second, it is also unclear how the results in the specification are pertinent to the art rejections; it does not appear that the results are pertinent. The commercially available fillers appear to be sufficiently different (i.e. different surface treatment, particle size, and chain length) than the prior art dental fillers that the results would not be pertinent even if, arguendo, the results cited in the specification were "unexpected".

It is noted that claim 37 is a product by process claim. It appears that the instantly claimed product by process is the same as that which is claimed (filler comprising silica and at least one crystalline phase). When the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct and not the examiner to show the same process of making. *In re Brown.* 173 USPQ 685 and *In re Fessman,* 180 USPQ 324. In the instant case, the applicant has argued lack of drying, heating, and silanizing an aqueous sol of silica particles but has failed to establish that their filler comprising silica and at least one crystalline phase is patentably distinct.

Additionally, claim 37 only requires that the precursor sol comprises silica nanoparticles in the form of chains and does not require the end product to be in the form of chains. This is because drying and heating steps can be varied in such a way that would break up the silica sol chains.

The double-patenting rejection is maintained.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 37 is rejected under 35 U.S.C. 102(b) as being anticipated by JP 360004561 A.

JP 360004561 A teaches a dental filler of silica having a particle diameter of 0.1-1.0 μm and also having metallic oxide (i.e. ceramic filler per claim 45 which could be an opacifying oxide) which is surface-treated with an organic silicon compound such as γ-aminopropyltriethoxysilane (see provided English abstract).

Claims 37-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Waknine (4544359).

Waknine teaches a dental filler having silica with an average particle size ranging from 0.01-0.05 microns (Column 2, lines 33-44; Column 8, lines 15-17). Waknine teaches that an opacifying oxide may be added to the filler (Column 3, lines 14-21). Waknine that the filler is surface-treated with a silane (Column 5, lines 64-66) and that the filler may also have microparticulate glass, in this case a borosilicate (Column 2, lines 33-44; Column 8, lines 15-17).

Claims 37-39 and 43-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Yuasa et al. (4764497).

Yuasa et al. teaches an inorganic filler materials of silica and metal oxides, which include opacifying oxides, having a particle size of 0.1-1.0 μm (Column 1, line 58 to Column 2, line 2; Column 2, lines 52-62; Column 3, lines 34-37) which can be used as dental filler material (Column 4, lines 25-27). Yuasa et al. further teaches that the material can be surface-treated with a silane such as γ-aminopropyltrimethoxysilane (Column 11, lines 22-35).

Claims 37-39 and 43 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhang et al. (6387981).

Zhang et al. teaches a dental material having silica particles less than 100 nm (Column 33-44) which is surface treated with a silane (Column 6, lines 1-19) and which may have additional ceramic filler (Column 7, lines 4-10) as well as opacifying oxides (Column 6, line 38 to Column 7, line 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 360004561 A as applied to claim 38 above.

JP 360004561 A teaches the dental filler as described with respect to claim 38 above having a particle diameter of 0.1-1.0 μm. Though this particle size range is not the same as that which is claimed, the claimed range would be obvious because the prior art range is so close that one skilled in the art would have expected it to have the same properties. *Titanium Metals Corp. v. Banner,* 227 USPQ 773. This is particularly true in light of the fact that the filler material is not only intended for the same end use (dental applications) but also because the material is surface-treated in the same manner.

Claims 37-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowen (3066112).

Bowen teaches a dental filler material (Column 1, lines 12-15) of fused silica particles (Column 2, lines 18-20) fine enough to pass through a 325 sieve (i.e. smaller than 45 microns) which is treated with an organosilanol (Column 2, lines 24-25) and which also can having an opacifying oxide added (Column 6, lines 20-27). Though this particle size range is not the same as that which is claimed, the claimed range would be obvious because the prior art range is so close that one skilled in the art would have expected it to have the same properties. *Titanium Metals Corp. v. Banner,* 227 USPQ 773. This is particularly true in light of the fact that the filler material is not only intended for the same end use (dental applications) but also because the material is surface-treated in a similar manner. In the alternative, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a particle size in the claimed ranges, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. In re Boesch, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to use a particle size such as that claimed by the reasoned explanation that particle size is related to the important properties as listed by Bowen (Columns 5-6 discussing setting time, compressive strength, solubility and disintegration, coefficient of thermal expansion, hardening shrinkage, color stability, and opacity).

Claims 37-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuasa et al. (4764497).

Yuasa et al. teaches an inorganic filler materials of silica and metal oxides, which include opacifying oxides, having a particle size of 0.1-1.0 µm (Column 1, line 58 to Column 2, line 2; Column 2, lines 52-62; Column 3, lines 34-37) which can be used as dental filler material (Column 4, lines 25-27). Though this particle size range is not the same as that which is claimed, the claimed range would be obvious because the prior art range is so close that one skilled in the art would have expected it to have the same properties. *Titanium Metals Corp. v. Banner,* 227 USPQ 773. This is particularly true in light of the fact that the filler material is not only intended for the same end use (dental applications) but also because the material is surface-treated in the same manner. In the alternative, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a particle size in the claimed ranges, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. In re Boesch, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to use a particle size such as that claimed by the reasoned explanation that the particle size directly impacts the filling, density, curing, smoothness of surface, specific surface area, and amount of packing (Columns 12-13, lines 61-12) and is thus a result effective variable.

Yuasa et al. further teaches that the material can be surface-treated with a silane such as γ-aminopropyltrimethoxysilane (Column 11, lines 22-35). This exemplary silanizing agent is so close to that which is claimed, γ-aminopropyltriethoxysilane, one skilled in the art would have expected it to have the same properties, serve the same purpose in treating the filler, and act in the same desirable manner as a silanizing agent for surface treatment.

Claims 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowen (3066112) as applied to claim 38 above, and further in view of Bullock (4180911).

Bowen teaches the dental filler material as described with respect to claim 38 above including that it is treated with an organosilanol (Column 2, lines 24-25) and that an opacifying oxide added (Column 6, lines 20-27). Bowen does not teach the three specific silanes of claim 44.

Bullock teaches a dental filler material is treated with a silane which can be γ-mercatopropyltrimethoxysilane or γ-aminopropyltriethoxysilane (Columns 4-5, lines 62-2).

It would have been obvious to modify the silane surface treatment of Bowen by using the silane surface treating agents as taught by Bullock because the teachings in each reference would lead one of ordinary skill in the art to believe that they are roughly equivalents, used on similar materials for similar effect on products having a similar end use; the silanes of Bullock achieve the purpose of the silanes of Bowen.

Claims 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waknine (4544359) as applied to claim 38 above, and further in view of Bullock (4180911).

Waknine teaches the dental filler as described with respect to claim 38 above. Waknine teaches that the filler is surface-treated with a silane (Column 5, lines 64-66) and that the filler may also have microparticulate glass, in this case a borosilicate

(Column 2, lines 33-44; Column 8, lines 15-17). Waknine does not teach the three specific silanes of claim 44.

Bullock teaches a dental filler material is treated with a silane which can be γ-mercatopropyltrimethoxysilane or γ-aminopropyltriethoxysilane (Columns 4-5, lines 62-2).

It would have been obvious to modify the silane surface treatment of Waknineby using the silane surface treating agents as taught by Bullock because the teachings in each reference would lead one of ordinary skill in the art to believe that they are roughly equivalents, used on similar materials for similar effect on products having a similar end use; the silanes of Bullock achieve the purpose of the silanes of Waknine.

Claims 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (6387981) as applied to claim 38 above, and further in view of Bullock (4180911).

Zhang et al. teaches the dental material as described with respect to claim 38 above which is surface treated with a silane (Column 6, lines 1-19) and which may have additional ceramic filler (Column 7, lines 4-10) as well as opacifying oxides (Column 6, line 38 to Column 7, line 3). Zhang et al. does not teach the three specific silanes of claim 44.

Bullock teaches a dental filler material is treated with a silane which can be γ-mercatopropyltrimethoxysilane or γ-aminopropyltriethoxysilane (Columns 4-5, lines 62-2).

It would have been obvious to modify the silane surface treatment of Zhang et al. by using the silane surface treating agents as taught by Bullock because the teachings in each reference would lead one of ordinary skill in the art to believe that they are roughly equivalents, used on similar materials for similar effect on products having a similar end use; the silanes of Bullock achieve the purpose of the silanes of Zhang et al.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 37-40 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 3 and 7 of U.S. Patent No. 6,417,246. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed range of 50-400 nm makes the instantly claimed size ranges obvious.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Wartalowicz whose telephone number is (571) 272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Paul Wartalowicz
March 9, 2007

Wayne A. Langel

WAYNE A. LANGEL
PRIMARY EXAMINER